

# A new subspecies of Western Orphean Warbler *Sylvia hortensis* and criteria for separating Western from Eastern Orphean Warbler *S. crassirostris*

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**Summary.**—A distinctive new subspecies of Western Orphean Warbler *Sylvia hortensis*, a species previously regarded as monotypic, is described. The new subspecies breeds in a restricted area in north-east Libya. This population has previously been treated as either intermediate or, more usually, belonging to *S. crassirostris* (Eastern Orphean Warbler). Criteria helpful for the separation of Western and Eastern Orphean Warblers are presented, including biometrics and details of an almost invariably diagnostic tail pattern.

For c.100 years, the Orphean Warbler was regarded as a polytypic species comprising 3–4 subspecies ranging from Iberia and north-west Africa to southern Central Asia. With a better appreciation of differences in vocalisations, morphology, moult and genetic markers, in recent years it has been treated as Western Orphean Warbler *S. hortensis* and Eastern Orphean Warbler *S. crassirostris*, either as two allospecies (Shirihai *et al.* 2001, Kirwan *et al.* 2008) or two biological species (e.g. Svensson *et al.* 2009, Porter & Aspinall 2010). The dividing line between them runs through central Europe east of Switzerland and Italy, south in the Adriatic Sea and across the Mediterranean Sea to somewhere in northern Libya. Following the split, Western Orphean Warbler was judged to be monotypic, whereas Eastern is polytypic with 2–3 subspecies depending on adopted taxonomy. The two species differ by as much as 6.4% in mitochondrial DNA (three samples each of *hortensis* and *crassirostris*, Shirihai *et al.* 2001; H. Shirihai *in litt.* 2011), considerably more than is typical for subspecies. Other important differences are: diagnosably distinct songs, different tail pattern, nearly always different undertail-coverts pattern and a few more subtle differences in plumage which at least when used in combination are diagnostic for all birds. There are also differences in mean bill length (although there is considerable overlap; Table 1) and sometimes bill colour.

## Subspecies and geographical range

The following is the taxonomy commonly employed in various recent checklists and field guides (see references above), and to be adopted in the forthcoming *Handbook of Western Palearctic birds* (Shirihai & Svensson in prep.).

### WESTERN ORPHEAN WARBLER

*Sylvia hortensis* (J. F. Gmelin, 1789).—Type locality: France. Range: Iberia, southern France, northernmost Italy and, locally, Switzerland. Also breeds in north-west Africa from Morocco east to Tunisia and at least in part of Libya.

### EASTERN ORPHEAN WARBLER

*Sylvia c. crassirostris* Cretzschmar, 1826.—Type locality: Nubia [winter]. Range: Slovenia east through the Balkans and Asia Minor, probably reaching western Transcaucasia; south to the Levant.

*Sylvia c. jerdoni* (Blyth, 1847).—Type locality: South India [winter]. Range: Eastern (or possibly all of) Transcaucasia, Transcaspiya, Iran east through Pakistan to extreme north-west India, north to Tajikistan and Kyrgyzstan. Differs from nominate in having darker and better-marked cap in males, in particular towards nape, paler and greyer, less drab brown rest of upperparts and paler, more cream-white underparts, less tinged pinkish-grey. Bill averages longer. (Syn.: *balchanica* Zarudny & Bilkevitch, 1918.)

Vaurie (1954) recognised *balchanica* from Transcaspiya and much of Iran (except the south-east) with type locality Great Balkhan in western Transcaspiya. He claimed that this form differed sufficiently by male plumage having a more distinct and extensive cap than *crassirostris*, and in being paler above with a proportionately longer tail, though not quite as pale and black-capped as typical *jerdoni*. However, when recently comparing long series' of all taxa it was difficult to agree with Vaurie's view. All Eastern Orphean Warbler populations form a cline from west to east with increasing distinctness of male cap, paler upperparts and subtly paler underparts, and proportionately longer tail, and it becomes a matter of how many taxa to formally recognise along this cline. In my opinion, it is in this case sufficient to name the ends of the cline. The overall differences are anyway rather slight. The male cap becomes on average more distinct and blackish at the rear somewhere in Transcaucasia (Georgia, Armenia and Azerbaijan, though some birds as far west as the Taurus Mountains, south central Turkey, can possess a quite distinct cap, too), and Transcaucasia can be seen to form a comparatively narrow transition zone between the two main forms, *crassirostris* and *jerdoni*. The mainly Iranian '*balchanica*' is much closer in appearance to *jerdoni* than to *crassirostris*, and best included within it. This agrees with Williamson (1968).

### Tail pattern in the Orphean Warbler complex

To test the diagnostic value of the tail pattern I examined a large number of well-prepared specimens of Western and Eastern Orphean Warblers at the Natural History Museum, Tring (BMNH) and American Museum of Natural History, New York (AMNH), and in the collections in the Paris, Leiden, Copenhagen and Stockholm museums (total numbers measured can be seen in Table 1, although many more were examined for plumage characters). This revealed that the tail pattern is invariably diagnostic for adults (Figs. 4–7, 11), and provides 99% separation of juveniles with practice (Figs. 8 and 10). A few Western and Eastern juveniles possess a more similar pattern but can still nearly always be separated given the tendency in Western to mirror the pattern of the adult, with a long and narrow pale wedge on the inner web of the outermost rectrix, with the pale area not widening distally, whereas in the most similar juvenile Eastern there is frequently a hint of a more obtusely widening pale tip on this feather, again recalling adult pattern. As Figs. 8 and 10 demonstrate, a tiny number of juveniles or first-winters can have very nearly the same tail pattern, and identification of these requires careful attention to plumage colours and bill (see below and Table 1).

In adults, a narrow, pointed and long white wedge on the second outermost rectrix occurs only in Western Orphean Warbler (Fig. 11), whereas the white tip to this feather in adult Eastern is typically short and square. Such a long, narrow wedge is not always present on the second outermost rectrix in Western—some possess just a small white tip—but when it is present it has high diagnostic value. A few Western Orphean Warblers even possess a narrow white wedge on the inner web of the third outermost rectrix. In Shirihai *et al.* (2001: 166), three drawings of the tail pattern in the Orphean Warbler complex are presented. Unfortunately, all three legends are incorrect and should read from left to right: *hortensis* (juv.), *crassirostris* (ad.) and *hortensis* (ad.). The error is repeated in the main text.



Figure 1. Holotype (lower) and syntypes (upper three) of Western Orphean Warbler *Sylvia hortensis cyrenaicae* (L. Svensson / © American Museum of Natural History)

Figure 2. Holotype (lower) and syntypes (upper three) of Western Orphean Warbler *Sylvia hortensis cyrenaicae* (L. Svensson / © American Museum of Natural History)

Figure 3. Holotype (lower) and syntypes (upper three) of Western Orphean Warbler *Sylvia hortensis cyrenaicae* (L. Svensson / © American Museum of Natural History)

Figure 4. Holotype of *Sylvia hortensis cyrenaicae* showing tail pattern typical for all adult Western Orphean Warblers with long narrow white wedge on inner web of outermost rectrix and smaller narrow wedge on second outermost feather (L. Svensson / © American Museum of Natural History)

Figure 5. Tail of Western Orphean Warbler *Sylvia h. hortensis* from Oran, western Algeria, April; note long narrow white wedge on inner web of outermost rectrix (L. Svensson / © American Museum of Natural History)

Figure 6. Tail of adult Eastern Orphean Warbler *Sylvia c. crassirostris* from Mostar, Bosnia, May; note clear difference from Western Orphean Warbler *S. hortensis* in that white wedge on inner web of outermost rectrix is short and broad, widening at tip, and white tips to fourth and fifth rectrices are invariably short, broad and obtuse (L. Svensson / © American Museum of Natural History)

## Variation in bill size and bill colour

Differences in bill length and bill colour between Western and Eastern Orpheat Warblers have frequently been exaggerated in the literature. The bill of Eastern averages longer and the base of its lower mandible is more often contrastingly pale bluish compared to the slightly shorter and more darkish bill of Western, but there is considerable overlap in bill length (Table 1) and the amount of pale blue is linked to bill length, shorter bills having less.

Within Western Orpheat Warbler a certain clinal variation in bill length can be observed as already noted by Watson (1964). Breeders in Europe have subtly shorter bills than those in North Africa. Mean bill lengths (to skull) in my material are for presumed breeders (collected in May–early August) in Europe 16.8 mm (15.1–18.2 mm;  $n = 34$ , SD 0.76), Morocco to Tunisia 17.4 mm (16.0–18.7 mm;  $n = 29$ , SD 0.83) and Cyrenaica 19.2 mm (18.5–20.3 mm;  $n = 7$ , SD 0.64). It can be seen from these measurements that there is very little overlap between the north-west African and the Cyrenaican populations (although sample size of Cyrenaican birds is small). If four presumed birds presumed to belong to this population based on bill size, general plumage coloration and tail pattern are added, two collected in May in Niger and singles in October and November in Mali (BMNH 1932.8.6.412, 1932.8.6.414, 1932.8.6.417 and 1932.8.6.418), the statistics for bill to skull of the Cyrenaican birds become 19.1 mm (18.5–20.3 mm;  $n = 11$ , SD 0.53).

Judging from specimens and photographs, Western Orpheat Warblers of the nominate subspecies have on average a somewhat darker bill than Eastern Orpheat Warblers. There is some overlap, but quite a few Western with a shorter bill (bill measurements in the lower half of the range of variation) appear to possess all-dark bills. Those with a slightly longer bill can show a small pale blue-grey base, and some, including all Cyrenaican birds examined, possess a larger pale base and appear largely inseparable from Eastern Orpheat Warbler using this trait alone.

Bill length in Eastern Orpheat Warbler varies, too. Eastern *jerdoni* has a markedly longer bill than the nominate race (Table 1). Also, within the nominate race slight variation is apparent, with birds from the Levant having the shortest bill (mean 17.6 mm, 16.4–19.6 mm,  $n = 19$ , SD 0.91), breeders in Greece and the Balkans being intermediate (mean 18.2 mm, 17.0–19.1 mm,  $n = 19$ , SD 0.67) and those from Turkey having the longest bill (mean 18.4 mm, 17.8–19.6 mm,  $n = 5$ , SD 0.73). Note that in the Levant sample the bird with a bill measuring 19.6 mm, and indeed others in this sample, could have been migrants to Turkey since for this group birds from late March and April were included.

Both bill length and bill colour of the Cyrenaican birds are similar to those found in Eastern Orpheat Warbler, mean length and colour pattern falling between *crassirostris* and *jerdoni*.

## The population in north-east Libya

Hartert and Hilgert discovered a small breeding population of Orpheat Warblers near the town of Al Marj (formerly Merg or Barce) in north-eastern Libya during their two-month visit to Cyrenaica in 1922 (Hartert 1923). This was the first breeding record of the species in this part of Libya. They collected four birds, now at AMNH, which they identified as *crassirostris* (nowadays Eastern Orpheat Warbler of the nominate race). Hartert probably was influenced in his diagnosis by the long, bicoloured bills. He remarked on their rather simple song, comparing it among other species to Common Bulbul *Pycnonotus barbatus*, but did not draw conclusions from this observation.

Subsequently, in 1952, Stanford (1954) visited Wadi al Kuf and Messa c.20 km east of Benghazi, also in north Cyrenaica, where in April he, too, observed the birds in question and collected three, now held at BMNH. He regarded them as intermediates between *hortensis* and *crassirostris*. He also commented on the song, which like Hartert he considered simple. Based on his description it is reasonable to assume that the song is very similar to that of *hortensis*. Stanford reported: 'I shot a male singing in oak trees ..., a four-syllabled song, constantly repeated, which was notably distinct, and reminded me of some notes of a Blackbird.' The few notes and the repetitive nature of the song match only Western Orphean Warbler. Eastern Orphean Warbler has a longer, more complex and pleasing song, often likened to that of Common Nightingale *Luscinia megarhynchos*, and quite different to the rather monotonous short strophe of Western Orphean Warbler, at times compared to the song of Ring Ouzel *Turdus torquatus*.

Vaurie (1954) and Williamson (1968) referred the Cyrenaican breeders to *crassirostris*, following Hartert. Most authors mention the mix of characters from both Western and Eastern populations noted in these birds. Haffer & Glutz von Blotzheim (*in* Glutz von Blotzheim & Bauer 1991) state that the Cyrenaican population is intermediate, but under the range description Isenmann, responsible for most of the Orphean Warbler account, clearly states that all Libyan breeders can be referred to western *hortensis* (pp. 737–739, *loc. cit.*).

This latter suggestion was not followed by Shirihai *et al.* (2001), at least not wholeheartedly. In dealing with the range of Western Orphean Warbler (p. 157), this is given as 'NW (also NE?) Libya', indicating that the Cyrenaican population had been considered possibly belonging to the western species. However, later in the same book (p. 167) the Cyrenaican range is firmly placed within the eastern species. In a note ('N.B. 1', p. 168) we read: 'Those from further east in Cyrenaica, NE Libya ... are closer to *crassirostris* overall (including bill characters), but darker and have underparts mainly like nominate ... They were regarded as *S. [h.] hortensis* by Isenmann (1991), but bioacoustic evidence appears to be lacking.' As related above, song descriptions do exist. The taxonomic assessment of the north-east Libyan birds in Shirihai *et al.* (2001) is therefore at best undecided.

In summary, all authors have noted the intermediary character of the north-east Libyan birds, but only Isenmann *in* Glutz von Blotzheim & Bauer (1991) clearly referred them to the western species or, as it was before the split, the western subspecies.

Following the split—a taxonomic change that seems unusually well founded based on DNA, song and morphology, which goes back to early research by Shirihai *et al.* (2001, and pers. comm.), and has been adopted by the Association of European Records and Rarities Committees (AERC 2010)—it is no longer possible to regard the north-east Libyan population as intermediate or as a bridge between *hortensis* and *crassirostris*, it must be referred to one or the other.

During my work with the above-mentioned handbook, I took a critical look at the seven specimens, the three in BMNH and four in AMNH. It was soon evident that these birds belong to Western Orphean Warbler, based on tail pattern (see above) and undertail-coverts pattern, in both respects the same pattern as found in all populations of *hortensis* examined (including birds from Tunisia, Algeria, Morocco, Spain, France and Italy) and in contrast to the plumage of *crassirostris*. Supporting evidence comes from the published descriptions of the song. The birds in north-east Libya differ sufficiently from all other populations of the Western Orphean Warbler to constitute a separate subspecies, which I here name:

### *Sylvia hortensis cyrenaicae*, subsp. nov.

**Holotype.**—Adult male, AMNH no. 595763, collected by E. Hartert & C. Hilgert near Al Marj ('Merg') c.85 km north-east of Benghazi, c.18 km from the coast, in north-east Libya, on



Figure 7. Tail of adult Eastern Orphean Warbler *Sylvia crassirostris jerdoni* from Sirax, south of Tedzhen, south-east Turkmenistan, March; note similar tail pattern to nominate Eastern in Fig. 6. (L. Svensson / © American Museum of Natural History)

Figure 8. Tail of first-winter Western Orphean Warbler *Sylvia h. hortensis* from Sidi Moussa, Mazagan, Morocco, September; although white portions are more sullied and off-white, and patterns diffuser, the typical pattern of adult Western is still clearly visible with long and narrow whitish wedge on outermost rectrix (L. Svensson / © American Museum of Natural History)

Figure 9. Tail of first-winter Eastern Orphean Warbler *Sylvia c. crassirostris* from Nabulus, Palestine, September; although the white portions are more sullied and off-white in a young bird, and patterns diffuser, the typical main pattern of adult Eastern is already visible (L. Svensson / © Natural History Museum, Tring)

Figure 10. Tail of first-winter Eastern Orphean Warbler *Sylvia c. crassirostris* from Port Sudan, Sudan, December; this bird is more difficult to identify using tail pattern, but note that a large part of the tip of the outermost rectrix is mainly whitish, the dark portion on inner web stopping well short of the tip; cf. Fig. 8 (L. Svensson / © Natural History Museum, Tring)

Figure 11. Tail of adult Western Orphean Warbler *Sylvia h. hortensis* from Eluzzus River, Air, Niger, October; note deep, pointed white wedge also on second outermost rectrix, a fairly common variation in Western but usually not seen in Eastern Orphean Warbler *S. crassirostris* (L. Svensson / © American Museum of Natural History)

9 May 1922. The sex and age are evident from plumage colours and wear. Measurements: wing length (max.) 79 mm, tail 65 mm, tarsus 21.3 mm, bill to skull 19.5 mm, bill depth at feathering 5.2 mm. Sooty black cap with diffuse rear edge, pale drab to greyish-olive mantle and back, whitish underparts with vinaceous-buff tinge to flanks and vent, pale vinaceous-buff undertail-coverts lacking darker grey centres (or with only diffuse light drab centres). (Colours after Ridgway 1912.) Bill long and pointed with about half of inner lower mandible pale bluish-grey (bluish-grey colour becoming straw-yellow on dried specimens). See Figs. 1–3.

**Label.**—On one side in print: Rothschild Museum. Written in ink: Merg, Cyrenaica. 11/5/1922. ♀ s. Hartert & Hilgert coll. On other side: Am. Mus. Nat. Hist. 595763. *Sylvia orphea crassirostris* Cretzschm.

**Paratypes.**—The following three specimens have been selected as paratypes. Adult male, AMNH no. 595762, 11 May 1922, Al Marj, wing length 86 mm, tail 67 mm, tarsus 22.6 mm, bill to skull 19.7 mm, bill depth at feathering 5.3 mm; second year male, AMNH no. 595764, 9 May 1922, near Al Marj, wing length 79 mm, tail 65.5 mm, tarsus 23.6 mm, bill to skull 18.7 mm, bill depth at feathering 4.5 mm; adult female, AMNH no. 595766, 9 May 1922, near Al Marj, wing length 80.5 mm, tail 65 mm, tarsus 23.5 mm, bill to skull 19.0 mm, bill depth at feathering 5.0 mm.

**Distribution.**—Known to breed only at the type locality and close to Benghazi, but presumed range probably includes similar habitats in adjacent areas of northern Cyrenaica. Birds further west, in northern Tripolitania in north-west Libya, are generally regarded to be nominate *hortensis*, but this may require confirmation. Bundy (1976) shows a similar range in northern Cyrenaica as here indicated. Stanford (1954) cites a R. S. M. Green (member of a lancers' regiment near Benghazi) to have observed the species 'on the north coast on 10 September', but this could of course have referred to a migrant from Europe. That the birds studied by Hartert, Hilgert and Stanford were breeding is beyond doubt. Hartert saw recently fledged young on 9 May, and on the label of one of the paratypes (AMNH 595764) enlarged testes are drawn in ink.

**Diagnosis.**—Both sexes share the tail pattern of *hortensis* with a long and narrow white wedge on the inner web of the outermost rectrix reaching far towards the base without broadening distally, the dark innermost portion on the inner web reaching far out, close to the tip of the feather (Fig. 4). Also, the undertail-coverts are sullied cream-buff without the darker greyish centres typical of Eastern Orphean Warbler. Lower belly and vent are also faintly tinged vinaceous-buff rather than being whitish with a drab-grey hue. (Colours after Ridgway 1912.) It is thus clearly a form of Western Orphean Warbler.

However, the new taxon differs from other *hortensis* populations in having a slightly paler mantle and back, and a longer and more obviously two-toned bill. Normally, Western Orphean Warbler has a somewhat shorter bill, sometimes all dark but more commonly with about a third or less of the lower mandible basally paler, whereas Eastern has a somewhat longer bill with a prominent pale base to the lower mandible, habitually the inner half of the lower mandible is pale blue-grey. In short, the north-east Libyan population resembles a pale *hortensis* with a *crassirostris* bill. The underparts are slightly paler than in typical *hortensis*, having only a somewhat subdued vinaceous-buff tinge to the flanks and vent, but certainly some appear similar. Darkness and distinctness of the sooty-black cap in males appears intermediate between Western and Eastern Orphean Warblers although closest to Western, the rear border being slightly diffuse. There is a fair degree of variation in darkness and distinctness of the dark cap in males in all but the eastern race *jerdoni* of Eastern Orphean Warbler, which invariably has a blackish and well-marked cap, hence this pattern is given limited importance in the diagnosis.

TABLE 1

Measurements (mm) for all taxa in the Orphean Warbler complex. Only specimens collected on presumed breeding sites included. All measurements taken by the author, following measuring standards presented in Svensson (1992). For all taxa, data are presented in the form **mean**  $\pm$  standard deviation, (range) plus ( $n$  = sample size). Sexes have been combined since differences generally were within 1% and never exceeded 2%.

	Wing (max.)	Tail	Bill to skull	Tarsus
<i>S. h. hortensis</i>	<b>80.1</b> $\pm$ 2.99 (73.0–87.0) ( $n=80$ )	<b>65.6</b> $\pm$ 2.76 (59.0–72.0) ( $n=82$ )	<b>17.1</b> $\pm$ 0.86 (15.1–19.0) ( $n=81$ )	<b>22.6</b> $\pm$ 0.62 (21.0–24.0) ( $n=80$ )
<i>S. h. cyrenaicae</i>	<b>82.9</b> $\pm$ 3.33 (79.0–87.0) ( $n=7$ )	<b>65.8</b> $\pm$ 1.22 (65.0–68.0) ( $n=7$ )	<b>19.2</b> $\pm$ 0.64 (18.5–20.3) ( $n=7$ )	<b>22.9</b> $\pm$ 0.87 (21.3–23.6) ( $n=7$ )
<i>S. c. crassirostris</i>	<b>80.5</b> $\pm$ 1.94 (77.0–84.5) ( $n=66$ )	<b>66.6</b> $\pm$ 2.42 (61.0–74.0) ( $n=67$ )	<b>18.1</b> $\pm$ 0.76 (16.4–19.6) ( $n=66$ )	<b>22.9</b> $\pm$ 0.60 (21.5–24.2) ( $n=66$ )
<i>S. c. jerdoni</i>	<b>80.7</b> $\pm$ 2.32 (76.5–87.0) ( $n=40$ )	<b>67.6</b> $\pm$ 2.72 (62.0–73.0) ( $n=40$ )	<b>19.7</b> $\pm$ 1.04 (17.8–21.8) ( $n=39$ )	<b>23.0</b> $\pm$ 0.69 (21.5–24.0) ( $n=34$ )

From the labels of two of the syntypes we learn the colour of the soft parts: 'iris ivory-white, bill blackish-horn with base of lower mandible palest blue, feet brownish lead-coloured.'

**Etymology.**—The proposed name refers to the restricted range, apparently confined to the north-eastern province Cyrenaica of Libya.

## Discussion

The Cyrenaican population merits recognition as a distinct taxon, especially when the Orphean Warbler complex is split into two species. It is perhaps more of an open question to which species it should be referred. As related above, Hartert (1923) identified it as *crassirostris* and most authors since have accepted this. In my opinion there is compelling evidence for referring *cyrenaicae* to Western Orphean Warbler as already done by Isenmann in Glutz von Blotzheim & Bauer (1991). Based on existing descriptions the song is obviously of the simple, repetitive kind typical of Western Orphean. The tail pattern, as here shown, is the same as all other Western Orphean populations, as is the undertail-coverts pattern. That the bill size is larger than normal and the body plumage slightly paler can in my opinion be explained as two presumably more easily adaptable traits dependent on ecological factors than are the exact tail pattern and the undertail-coverts pattern, both most likely of more significant weight when relationships are estimated using external morphology. Bills of populations in more arid and warm climates often become larger (presumably because insect prey possess thicker shells or skin), and plumage colours are often paler in arid climates. Therefore, when all the evidence is considered, the Cyrenaican population should be referred to the Western rather than to the Eastern species.

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